

Claims

1. A method for providing forward packet data channel (F-PDCH) service to mobile stations (MSs) in a mobile communication system, the method
5 comprising:
 providing, by a cell in the mobile communication system, data transmission services via a F-PDCH;
 indicating to an MS that the cell will not provide data transmission service to the MS via the F-PDCH.
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2. The method of claim 1,
 wherein providing data transmission services comprises providing data transmission services to the MS and wherein indicating that the cell will not provide data transmission service to the MS comprises indicating, by the cell,
15 that the cell will no longer provide data transmission service to the MS via the F-PDCH.
3. The method of claim 1,
 wherein indicating to the MS that the cell will not provide data
20 transmission service to the MS via the F-PDCH comprises sending a channel assignment message to the MS that indicates that the cell does not support a F-PDCH.
4. The method of claim 1,
25 wherein indicating to the MS that the cell will not provide data transmission service to the MS via the F-PDCH comprises sending a channel assignment message to the MS that indicates that the cell is not part of an active set of the MS.
- 30 5. The method of claim 1, further comprising
 determining whether the cell is presently available to provide data transmission service to the MS via the F-PDCH of the cell;

6. The method of claim 5,
wherein determining whether the cell is presently available comprises
determining, when creating an active set for the MS, whether the cell is
presently available to provide data transmission service to the MS via the F-
5 PDCH of the cell.
7. The method of claim 5,
wherein determining whether the cell is presently available to provide
data transmission service to the MS via the F-PDCH of the cell comprises
10 requesting the cell to indicate the cell's availability to provide data
transmission service to the MS via the F-PDCH of the cell.
8. The method of claim 5,
wherein determining whether the cell is presently available to provide
15 data transmission service to the MS via the F-PDCH of the cell comprises
receiving an indication that the cell is presently unavailable to provide data
transmission service to the MS via the F-PDCH of the cell.
9. The method of claim 1, further comprising:
20 providing, by a serving cell in the mobile communication system, data
transmission services via a F-PDCH of the serving cell,
wherein providing data transmission services by the cell comprises
providing data transmission services by a selected target cell of the MS to at
least one MS in the mobile communication system other than the MS,
25 wherein indicating that the cell will not provide data transmission
service to the MS comprises indicating, by the serving cell, that the cell will
not provide data transmission service to the MS via the F-PDCH.
10. The method of claim 1, wherein providing data transmission services
30 comprises providing data transmission services to the MS by the cell via the
F-PDCH.

11. The method of claim 10,
wherein indicating to the MS that the cell will not provide data transmission service to the MS via the F-PDCH comprises sending, by the cell, a Universal Handoff Direction message (UHDM) that indicates that the cell does not support a F-PDCH.
12. The method of claim 10,
wherein indicating to the MS that the cell will not provide data transmission service to the MS via the F-PDCH comprises sending, by the cell, a Universal Handoff Direction message (UHDM) that indicates that the cell is not part of an active set of the MS.
13. The method of claim 10,
wherein indicating to the MS that the cell will not provide data transmission service to the MS via the F-PDCH comprises signaling, by the cell, a network initiated cancellation of the MS's present cell selection of the cell indicating a need for the MS to select an alternate cell to provide data transmission service to the MS via a F-PDCH.
14. The method of claim 10,
wherein indicating to the MS that the cell will not provide data transmission service to the MS via the F-PDCH comprises signaling the MS via a forward packet data control channel (F-PDCCH) of the cell.

15. A method for providing forward packet data channel (F-PDCH) service to mobile stations (MSs) in a mobile communication system, the method comprising:

providing, by a source base station (BS), data for transmission to an
5 MS via a forward packet data channel (F-PDCH);

receiving an indication that the MS intends to switch from a F-PDCH of a serving cell to a F-PDCH of a target cell for data transmission service;

determining whether the target cell is presently available to provide data transmission service to the MS via the F-PDCH of the target cell;

10 sending an indication to the MS that the target cell is presently unavailable to provide data transmission service to the MS via the F-PDCH of the target cell.

16. The method of claim 15,

15 wherein receiving the indication that the MS intends to switch comprises receiving the indication by the source BS from the MS via the serving cell and

wherein the source BS comprises the serving cell and is a serving BS of the MS.

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17. The method of claim 15,

wherein receiving the indication that the MS intends to switch comprises receiving the indication by the source BS from a serving BS and

wherein the serving BS comprises the serving cell.

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18. The method of claim 15,

wherein receiving the indication that the MS intends to switch comprises receiving the indication by the source BS from a target BS and

wherein the target BS comprises the target cell.

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19. The method of claim 15,

wherein determining whether the target cell is presently available to provide data transmission service to the MS via the F-PDCH of the target cell comprises receiving an indication that the target cell is presently unavailable to provide data transmission service to the MS via the F-PDCH of the target cell.

20. The method of claim 19,

wherein receiving the indication that the target cell is presently unavailable comprises receiving the indication from the target cell.

21. The method of claim 20,

wherein receiving the indication that the target cell is presently unavailable comprises receiving the indication from the target cell via a BSC-BTS signaling interface.

22. The method of claim 19,

wherein receiving the indication that the target cell is presently unavailable comprises receiving the indication from a target BS.

23. The method of claim 22,

wherein receiving the indication that the target cell is presently unavailable comprises receiving the indication from the target BS via an inter-BSC signaling interface.

24. The method of claim 19, further comprising:

subsequent to receiving the indication that the target cell is presently unavailable, receiving an indication that the target cell is available to provide data transmission service to the MS via the F-PDCH of the target cell;

sending an indication to the MS that the target cell is available to provide data transmission service to the MS via the F-PDCH of the target cell.

25. The method of claim 15,

wherein determining whether the target cell is presently available to provide data transmission service to the MS via the F-PDCH of the target cell comprises sending an indication to a target BS that the MS intends to switch to the F-PDCH of the target cell for data transmission service.

26. The method of claim 25,

wherein determining whether the target cell is presently available to provide data transmission service to the MS via the F-PDCH of the target cell comprises receiving, in response to the indication that the MS intends to switch, an indication that the target cell is presently unavailable to provide data transmission service to the MS via the F-PDCH of the target cell.

27. The method of claim 15,

wherein sending the indication to the MS that the target cell is presently unavailable to provide data transmission service to the MS via the F-PDCH of the target cell comprises sending the indication to the MS via the serving cell.

28. The method of claim 15,

wherein sending the indication to the MS that the target cell is presently unavailable to provide data transmission service to the MS via the F-PDCH of the target cell comprises sending the indication to the MS via a serving BS.

29. The method of claim 15,

wherein sending the indication to the MS that the target cell is presently unavailable to provide data transmission service to the MS via the F-PDCH of the target cell comprises sending the indication to the MS via a forward packet data control channel (F-PDCCH) of the serving cell.

30. The method of claim 15,

wherein sending the indication to the MS that the target cell is presently unavailable to provide data transmission service to the MS via the F-PDCH of the target cell comprises sending the indication to the MS via a forward fundicated channel of a cell in an active set of the MS.

31. The method of claim 15,

wherein sending the indication to the MS that the target cell is presently unavailable to provide data transmission service to the MS via the F-PDCH of the target cell comprises sending a Universal Handoff Direction message (UHDM) that indicates that the target cell does not support a F-PDCH.

32. The method of claim 15,

wherein sending the indication to the MS that the target cell is presently unavailable to provide data transmission service to the MS via the F-PDCH of the target cell comprises sending a Universal Handoff Direction message (UHDM) that indicates that the target cell is not part of an active set of the MS.

33. A method for a mobile station (MS) to maintain forward packet data channel (F-PDCH) service in a mobile communication system, the method comprising:

receiving, by an MS, data transmission service from a serving cell via a forward packet data channel (F-PDCH) of the serving cell;

determining, by the MS, to switch to a target cell for data transmission service via a F-PDCH of the target cell;

transmitting, by the MS, an indication of an MS intent to switch to the target cell;

receiving, by the MS, an indication that the target cell is presently unavailable to provide data transmission service to the MS via the F-PDCH of the target cell.

34. The method of claim 33,

wherein determining to switch to a target cell for data transmission service via a F-PDCH of the target cell comprises performing cell selection among cells from an active set of the MS that provide F_PDCH service.

35. The method of claim 33,

wherein transmitting the indication of the MS's intent to switch to the target cell comprises transmitting the indication of the MS's intent to switch to the target cell using a switching pattern on a Reverse Channel Quality Indication Channel (R-CQICH) of the MS.

36. The method of claim 33,

wherein receiving the indication that the target cell is currently unavailable to provide data transmission service to the MS via the F-PDCH of the target cell comprises receiving the indication by the MS via the serving cell.

37. The method of claim 33,
wherein receiving the indication that the target cell is currently
unavailable to provide data transmission service to the MS via the F-PDCH of
the target cell comprises receiving the indication by the MS via a forward
5 packet data control channel (F-PDCCH) of the serving cell.
38. The method of claim 33,
wherein receiving the indication that the target cell is currently
unavailable to provide data transmission service to the MS via the F-PDCH of
10 the target cell comprises receiving the indication by the MS via the target cell.
39. The method of claim 33,
wherein receiving the indication that the target cell is currently
unavailable to provide data transmission service to the MS via the F-PDCH of
15 the target cell comprises receiving a Universal Handoff Direction message
(UHDM) that indicates that the target cell does not support a F-PDCH.
40. The method of claim 33,
wherein receiving the indication that the target cell is currently
20 unavailable to provide data transmission service to the MS via the F-PDCH of
the target cell comprises receiving a Universal Handoff Direction message
(UHDM) that indicates that the target cell is not part of an active set of the
MS.
- 25 41. The method of claim 33, further comprising,
subsequent to receiving the indication that the target cell is currently
unavailable, receiving an indication that the target cell is available to provide
data transmission service to the MS via the F-PDCH of the target cell.

42. A base station (BS) comprising:

a base transceiver system (BTS)

adapted to provide communication services to a mobile station (MS), including data transmission via a forward packet data channel (F-PDCH);

a base site controller (BSC), communicatively coupled to the BTS,

adapted to provide data for transmission by the BTS to the MS via the F-PDCH,

adapted to receive, via the BTS, an indication that the MS intends to switch from the F-PDCH to a F-PDCH of a target cell for data transmission service,

adapted to determine whether the target cell is presently available to provide data transmission service to the MS via the F-PDCH of the target cell,

adapted to send, via the BTS, an indication to the MS that the target cell is presently unavailable to provide data transmission service to the MS via the F-PDCH of the target cell.

43. The BS of claim 42,

wherein adapted to determine whether the target cell is presently available to provide data transmission service to the MS via the F-PDCH of the target cell comprises adapted to receive an indication that the target cell is presently unavailable to provide data transmission service to the MS via the F-PDCH of the target cell.

44. The BS of claim 42,

wherein adapted to determine whether the target cell is presently available to provide data transmission service to the MS via the F-PDCH of the target cell comprises adapted to send an indication to a target BS that the MS intends to switch to the F-PDCH of the target cell for data transmission service.

45. The BS of claim 42,

wherein adapted to send the indication to the MS that the target cell is presently unavailable to provide data transmission service to the MS via the F-PDCH of the target cell comprises adapted to send, via the BTS, a
5 Universal Handoff Direction message (UHDM) that indicates that the target cell does not support a F-PDCH.

46. The BS of claim 42,

wherein adapted to send the indication to the MS that the target cell is
10 presently unavailable to provide data transmission service to the MS via the F-PDCH of the target cell comprises adapted to send, via the BTS, a Universal Handoff Direction message (UHDM) that indicates that the target cell is not part of an active set of the MS.

15 47. The BS of claim 42,

wherein adapted to send the indication to the MS that the target cell is presently unavailable to provide data transmission service to the MS via the F-PDCH of the target cell comprises adapted to send the indication to the MS via a forward packet data control channel (F-PDCCH) of the serving cell.

48. A mobile station (MS) comprising:
a transceiver;
a processor, communicatively coupled to the transceiver,
5 adapted to receive, via the transceiver, data transmission
service from a serving cell via a forward packet data
channel (F-PDCH) of the serving cell;
adapted to determine to switch from the serving cell to a target
cell for data transmission service via a F-PDCH of the
target cell;
10 adapted to transmit, via the transceiver, an indication of the
MS's intent to switch to the target cell;
adapted to receive, via the transceiver, an indication that the
target cell is presently unavailable to provide data
transmission service to the MS via the F-PDCH of the
15 target cell.
49. The MS of claim 48,
wherein the indication that the target cell is presently unavailable to
provide data transmission service to the MS via the F-PDCH of the target cell
20 comprises a Universal Handoff Direction message (UHDM) that indicates that
the target cell does not support a F-PDCH.
50. The MS of claim 48,
wherein the indication that the target cell is presently unavailable to
25 provide data transmission service to the MS via the F-PDCH of the target cell
comprises a Universal Handoff Direction message (UHDM) that indicates that
the target cell is not part of an active set of the MS.

51. The MS of claim 48,
wherein adapted to receive the indication that the target cell is
currently unavailable to provide data transmission service to the MS via the F-
PDCH of the target cell comprises adapted to receive the indication by the
5 MS via a forward packet data control channel (F-PDCCH) of the serving cell.